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mead. This is a part of the natural history survey of the State undertaken by the Association, and the paper is based largely upon material furnished by the Secretary, Mr. T. D. A. Cockerell. Three new genera are characterized, viz., *Neolaraa*, of the family *Bembecidæ*; *Microbracon*, of the *Braconidæ*, and *Dolichopselephus*, of the *Ichneumonidæ*. Sixty-seven new species are described, the descriptions of forty-one of which were drawn up from single specimens. The hymenopterous fauna of the State, so far as it is now known, includes 33 families, 247 genera, and 897 species.

ARCHÆOLOGY AND ETHNOLOGY.

On the Use of the Phonograph Among the Zuni Indians.

—Ever since I began my work with the phonograph as a means of preserving the language of the American Indians, I have looked forward with great interest to a visit to some of those tribes which still remain in approximately the same condition that they were when first visited by white men. Such tribes it is almost impossible to find now in the confines of the United States. But there are some which have been very little changed.

I have been particularly anxious to make observations among the Pueblo Indians, which still possess many interesting features of great antiquity. Of all the Pueblos, except possibly the Moquis, the Zuñians, or A'sheewee as they are called in their own tongue, have been least changed from their original condition by contact with Europeans. Living at a distance from the railroad, inhabiting isolated regions difficult of access, these people have preserved the ancestral traditions and customs in their primitive form. In many ways they offer an unparalleled opportunity for the study of the religious and secular celebrations of Pueblo Indians, slightly modified from the olden time.

A previous visit to Zuñi, in the summer of 1889, had inspired in me a wish to attempt to record on the cylinders of the phonograph the songs, rituals, and prayers used by these people, especially in those most immutable of all observances, sacred ceremonials. I was particularly anxious to record the songs connected with the celebration of the mid-summer dances, which occur at or near the summer solstice. By the help of Mrs. Hemenway, of Boston, it was possible for me, in the interest of the Hemenway Expedition, to visit Zuñi Pueblo at this time, and I have been fortunate enough to take on the phonograph,

from the lips of the Zuñians, a series of records illustrating the songs used in their sacred and secular observances. An extended paper, with illustrations of the dances, has been prepared for publication, and will be printed as soon as the music can be written out by an expert from the cylinders of the phonograph. Although I prefer not to publish my final contribution until the illustrations are prepared from my photographs, a brief notice of some of the phonographic records which I have may not be without interest.

One of the most interesting of the songs sung at this dance, which is called the Kea' kok' shi or good dance, is that of the Kō kō. This song I took directly from the lips of one of the participants in the dance. I have reason to believe that this song is improvised each year, as the music this summer is quite different from that of a year ago. I was told by the Zuñians before the dance that they did not know what the song was to be, and that no one knew except the participants. There is, however, a general resemblance, yet still great variety, in all these "Kō kō songs," and I have indelibly taken on phonographic cylinders as many as possible for a comparative study at a more favorable opportunity.

The possibility that the songs of the Kō kō were originally imitations of the wind blowing down the fireplace or around the house, is a fascinating idea which hardly seems capable of proof or the contrary. There are often strains in the Kō kō songs that remind one of the wind, and it is right appropriate that such imitations should occur in dances instituted for rain, which is ordinarily associated with the wind. At this place it may be well to mention the fact that there is introduced into the dance an implement to imitate the wind. On the entrance of the Kō kō into the Pueblo, and during the dances, the clowns or other persons, generally the clowns, have a small stick fastened to a buckskin thong, which they whirl about in a circle, making the sound of the wind. This implement, which is the exact counterpart of the "bull roarer," so well known to boys in some English communities, is called the wind. I cannot discover that it is used in the sacred ceremonies to frighten the women and children, or those who do not take part in the dance. Sometimes it is even used as a plaything by the Zuñi boys. In Australia an instrument almost exactly similar is used in sacred ceremonies to frighten those who do not take part, or to let them know that exercises are in progress, for which purpose its use was not unknown among the ancient Greeks.

Four days before the dance, on the afternoon before the departure of a delegation of priests to offer feather plumes at the "Sacred

Lake," Tay jay po une, a ceremony takes place in the Pueblo, which may be called the "Ducking of the Clowns." This observance is known to the Zuñians as the Dumāchimche, from the words of the song by the Ko ye a mashi, or mudhead clowns, on whom, in the course of the celebration, water is poured from the housetops by the squaws. This song has internal evidence of antiquity, and I am told by the Indians that both song and ceremony is very ancient. Although a musical critic might not find in it great beauty, as an undoubted specimen of ancient aboriginal music it is very interesting. I shall comment on the meaning of the Dumāchimche in another place, when the ceremony will be described at length.

A survival of the old practice of communal hunting still exists in some of the Pueblos in the so-called rabbit hunt. Several of these hunts have taken place during my residence in Zuñi. It has seemed to me that it is a semi-religious observance connected with summer dances, and I have therefore taken records of the song and prayer used by the hunters for future study.

While my observations have been particularly directed to the linguistic features of the solstitial dances in summer, I have not wholly neglected the great wealth of other material all about me for linguistic study by means of the phonograph.

The well-known celebration called the Sha' la 'ko, at which the Zuñi house is consecrated, is the occasion of an elaborate ceremonial, in which figures a song or chant and a prayer, said to be very ancient. I have never witnessed the celebration of the Sha' la 'ko, but have been able to obtain the chant and prayer from one of the natives. This capture had to be made secretly, unknown to the other Indians. It was found necessary to take it late at night, in a room darkened with blankets at the windows to prevent suspicion, and sentinels stationed about the house to warn us of the approach of intruders. On those conditions only was it possible to get the Indian to chant the Sa' hla 'ko on the phonograph. It is now, however, permanently recorded in the wax, and can be reproduced at pleasure, or what is of more importance to philological study, can be written out and studied at leisure under better conditions. I am told that it is next to impossible to get any of the Zuñians to sing the Sha' la 'ko out of season, and as the celebration regularly comes in November, a record of it in July is a fortunate acquisition. Certain of their winter songs they will not sing in summer, because to do it prevents the corn from growing. I do not know whether or not the chant of the Sha' la 'ko is one of these.

The phonographic record to which I look forward with the greatest hope is that of a Zuñi ritual to which writers have from time to time referred. This ritual, which has been designated by the dignified title of a Zuñi Epic, is of considerable length, and is regarded with great reference by the Zuñi people themselves. Haluta, the reciter of it at the time of its delivery, is said to be regarded as a most sacred personage, and when, prior to its recital, he is brought into the Pueblo his feet, it is said, are not allowed to touch the ground. It is thought probable that a phonographic record of the ritual would be an addition to our knowledge of Zuñian mythology.

The extracts from this ritual, which are freely translated from memory by Mr. Cushing in his interesting paper on Zuñi Fetishes, indicate that it is a valuable account of the mythological history of the race. He had not at his command an instrument to record the words of those portions of the "Kaklan" which he heard, and consequently was unable to give it in the original diction in which it is given before the members of certain priesthoods, to whom alone it is recited. He says that many of the words are in old Zuñi, not understood at present. The records which I have are good enough to enable me to write out the ritual, which, however, at the present state of my knowledge of the language I am unable to translate. With the help of those who understand the language, as well as English, I have no fear but that in my final paper I can publish a translation of the ritual as told by Haluta on the cylinder of the phonograph.

I have, after several failures, been able to get this recital on the phonograph, where it fills a long series of cylinders. Before the value of this record, both linguistic and mythological, can be appreciated, it must be carefully written out and studied. This will take a long time, as many of the words are old Zuñian, and the task of extracting the meaning from the ritual will found to be a difficult one. A permanent preservation of it is, however, a step in the interpretation, and when once indelibly fixed on phonographic cylinders its true character and significance can be investigated.

One of the most interesting of the Zuñi songs is that of the hunters. This song has many beautiful parts in it, and outside of its interest in the study of the customs of the hunters, is well worth preserving as a specimen of aboriginal music. I have thought it worthy of a place in my collection, and with it I have also preserved certain of the prayers to the fetishes used in the hunt, some of which have been written out and translated by Mr. Cushing. The harvest which a study of the hunting customs of the Zuñians offers is great, and the collection of

data bearing on this subject is highly important, since the decrease in game may on as New Mexico is more and more thickly settled, and the hunting ceremonials be more or less modified as time goes on.

I have not encountered in my experience in taking records with the phonograph any very great difficulty among the Zuñians. Their real impressions of the instrument it is very difficult to divine. One of them asked if a person was hidden in the machine, and another thought the phonograph bewitched. Indians are so stolid that it is very difficult to discover what impression such a novel instrument as the phonograph really makes. They are so accustomed to incomprehensible machines used by Americans that this last triumph of inventive genius affects them no more than many others which might be mentioned. Certainly they are not afraid of it, and there is no difficulty in getting them to talk into the instrument. The great difficulty in getting them to repeat their sacred songs and prayers does not come so much from their fear of the instrument as of secularizing what is sacred to them. They will readily respond with any of their secular songs, or with those sung in public, but those belonging to the secret ceremonials of the Estufa they will not divulge.—J. WALTER FEWKES, *Zuni, New Mexico, July 5th, 1890.*

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Biological Society of Washington.—May 31.—The following communications were read: Characteristics of the Halosauroids or Lyopomes; Dr. Theo. Gill. Exhibition of Specimens of New Species of North American Mammals; Dr. C. Hart Merriam. *Coultorella* a New Genus of *Compositæ*; Dr. J. N. Rose. Organisms in the St. Peter's Sandstone; Prof. Joseph F. James.—FREDERIC A. LUCAS, *Secretary.*

Natural Science Association of Staten Island.—May 8, 1890.—The following paper by Mr. Chas. W. Long was read: Staten Island Fire Flies.—No one will have failed to notice the abundance on Staten Island of the beetle commonly known as the firefly. As it is seen in early summer, in the words of Longfellow:

" Flitting through the dusk of evening,
With the twinkle of its candle,
Lighting up the brakes and bushes,"

it constitutes one of the peculiar charms of our latitude. It has been described by many a poet as well as naturalist, and those who have